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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,017	07/06/2006	Olaf Such	PHDE040009US	4785

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595 MINER ROAD		
CLEVELAND, OH 44143		

EXAMINER
BRYANT, MICHAEL C

ART UNIT	PAPER NUMBER
2884	

MAIL DATE	DELIVERY MODE
10/10/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/597,017

Applicant(s)

SUCH ET AL.

Examiner

Casey Bryant

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 06 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/6/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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#### DETAILED ACTION

##### *Priority*

1. The Applicant's claim for foreign priority of German Patent Application 04100073.8 has been recognized.

##### *Response to Amendment*

2. Applicant's Preliminary Amendment, filed 7/6/2007, has been received and entered. Accordingly, changes have been made to the claims. Claims 1-6 have been amended. No claims have been cancelled. No claims have been added. Thus, claims 1-9 remain currently pending in this application.

##### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 4 recites the limitation "the detector element" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

##### *Claim Rejections - 35 USC § 102*

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1–9 are rejected under 35 U.S.C. 102(b) as being anticipated by Boles et al.<sup>1</sup>

(hereafter “Boles”).

With respect to claim 1, Boles discloses a detector having a plurality of pixels, each having an integrated sigma–delta (SD) modulator, wherein the SD modulator has a differential design and a plurality of stages (abstract; II, A, para. 1; Figure 9).

With respect to claim 2, Boles discloses the SD modulator having a decimation filter (Figure 1; II, A, 2).

With respect to claim 3, Boles discloses the pixels and SD modulators formed on a CMOS–semiconductor substrate (abstract; I, para. 4).

With respect to claim 4, Boles discloses the SD modulator having a current feedback on the signal of a pixel with switch capacitor source (Part C, para. 1).

With respect to claim 5, Ribner discloses the pixels having a cascaded SC modulator arrangement (Figure 9).

With respect to claim 6, Boles discloses the SD modulator having a dynamic comparator (II, B, 3).

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<sup>1</sup> Boles, Colby D., Colby D., Bernhard E. Boser, Bruce H. Hasagawa, and Joseph A. Heanue. “A Multimode Digital Detector Readout for Solid–State medical Imaging Detectors.” IEEE Journal for Solid State Circuits 33, No. 5 (1998).

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With respect to claim 7, Boles discloses a semiconductor-based image sensor with the detector arrangement of claim 1 (abstract).

With respect to claim 8, Boles discloses an x-ray detector with the detector arrangement of claim 1 (abstract; I, para. 1).

With respect to claim 9, Boles discloses a CT system with the detector arrangement of claim 1 (abstract; I, para. 1).

8. Claims 1, 2, 4, 5 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ribner et al. (hereafter "Ribner")(US 5142286).

With respect to claim 1, Ribner discloses a detector having a plurality of pixels 20, each having an integrated sigma-delta (SD) modulator 23, wherein the SD modulator has a differential design and a plurality of stages (Figures 3A-C)(col. 3, line 53 - col. 4, line 31; col. 11, 26-48).

With respect to claim 2, Boles discloses the SD modulator having a decimation filter (col. 4, 8-12).

With respect to claim 4, Boles discloses the SD modulator having a current feedback on the signal of a pixel with switch capacitor source 84 (col. 21, 52-68).

With respect to claim 5, Ribner discloses the pixels having a cascaded SC modulator arrangement (Figures 3A-C).

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With respect to claim 7, Boles discloses a semiconductor-based image sensor with the detector arrangement of claim 1 (col. 1, 40-44).

With respect to claim 8, Boles discloses an x-ray detector with the detector arrangement of claim 1 (col. 1, 40-44).

With respect to claim 9, Boles discloses a CT system with the detector arrangement of claim 1 (col. 1, 40-44).

### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rocha et al. (see References Cited) discloses a CMOS X-ray image sensor via a single stage sigma-delta A/D.

Gordon et al. (US 6657571) discloses an x-ray imaging system using pixel level A/D conversion using sigma-delta converters.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Casey Bryant whose telephone number is (571) 270-1282. The examiner can normally be reached on Monday - Friday, 8am - 5pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Casey Bryant  
Patent Examiner  
GAU 2884



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